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NEW SPECIES AND RECORDS OF CHINESE SPIDERS

By Irving Fox

Through the kindness of Dr. W. J. Gertsch of the Department of Entomology of The American Museum of Natural History, this institution has placed in my hands for study and report two small collections of Chinese spiders made by Bassett Digby in Hong Kong during late January, 1920, and by John Graham in Yunnan Province.

In the study of this material it was necessary to make certain comparisons with specimens reposing in the United States National Museum, and for completeness there is added to this report the description of one new species and notes on several others collected by D. C. Graham in Szechwan Province.

I wish to express my thanks to the authorities of both The American Museum of Natural History and the United States National Museum and especially to Dr. W. J. Gertsch and Dr. E. A. Chapin of their respective institutions.

Agelenidae

Wadotes primus, new species

Figures 1 and 2

Female.—Total length, 8.91 mm. Carapace, 3.76 mm. long, 2.37 mm. wide. Face, 1.32 mm. wide, 0.57 mm. high. Abdomen (exclusive of spinnerets), 4.95 mm. long, 3.00 mm. wide. Carapace with a broad longitudinal median light band about as wide as the first eye-row anteriorly, broadening somewhat on the pars cephalica but narrowing abruptly at the Y-shaped thoracic furrow and thereafter extending to the posterior declivity as a narrow band, about one-half as wide as the broadest portion anteriorly. Sides of the carapace dark brown, with broad marginal light bands on the pars thoracica. Clypeus and chelicerae dark brown, more or less concolorous with the sides of the carapace. Sternum and coxae clear light brown, labium somewhat darker, slightly longer than wide (18/16). Legs light brown, weakly annulate at the femora and tibiae; palpi also light brown, darker distally. Abdomen grayish, without any distinct markings. Anterior spinnerets shorter than the posterior (17/24), the basal and distal joints of the latter subequal.

First row of eyes straight, much shorter than the second (20/27), the anterior laterals much larger than the anterior medians (5/2), the eyes equidistant, separated by about the diameter of an anterior median eye. Posterior row of eyes slightly procurved, the eyes subequal and equidistant, separated by a distance equal to three-fifths the diameter of an eye. The anterior lateral eyes separated from the clypeal

margin by about four-fifths their diameter, the anterior median eyes by about two and one-half times their diameter. Median ocular quadrangle slightly wider than long (13/12), much narrower in front than behind (9/13). Chelicerae robust, 1.76 mm. long, lower margin of the furrow armed with two weak teeth, upper margin armed with three teeth of which the middle is the largest.

Leg formula, 4123. Legs I, 10.99 mm. long; II, 9.01 mm. long; III, 8.51 mm. long; IV, 12.87 mm. long. Anterior tibiae and metatarsi armed with 2–2–2 spines below. Tibia and patella I, 3.17 mm. long, tibia and patella IV, 3.47 mm. long. Epigynum about as wide as long, provided with a median piece attached anteriorly but free posteriorly and divided, consisting of two widely separated branches. For further details regarding the structure of the epigynum see figure 2.

TYPE LOCALITY.—China: female holotype and female paratype from Hong Kong, late January, 1920 (Bassett Digby), the holotype in The American Museum of Natural History, the paratype in the United States National Museum (U. S. N. M. Cat. No. 1232).

So far as can be ascertained from the available literature, this genus has never before been reported from China, nor is it known to occur in Japan.

Lycosidae

Lycosa melica, new species

Figures 3 and 4

FEMALE.—Total length, 19.60 mm. Carapace, 9.00 mm. long, 6.21 mm. wide. Abdomen, 11.85 mm. long, 7.90 mm. wide. Dorsum of the carapace dark brown with slight indications of a wide median longitudinal light band. Submarginal bands indistinct or absent; the margins of the carapace black. Eye region black surrounded by reddish-yellow hairs which extend downward covering the clypeus. Chelicerae densely provided with reddish hairs basally, but distally black and with slight pubescence. Sternum, labium, and endites black, somewhat lighter at the margins. Legs reddish brown, without annulations, the anterior tibiae with a hardly perceptible dorsal median dark longitudinal line. Dorsum of the abdomen grayish, basally with a dark mark variable in shape which posteriorly may break into chevrons, bars, or spots. Sides also grayish but the venter black, with irregular spots of gray.

Anterior row of eyes procurved, shorter than the second row (22/25), the medians larger than the laterals (10/6), the eyes equidistant. Quadrangle of posterior eyes wider than long (31/26), the anterior eyes larger than the posterior (10/8). Clypeus slightly more in height than the diameter of an anterior median eye. Chelicerae exclusive of claw, 3.96 mm. long; lower margin of the furrow armed with three robust teeth.

Sternum longer than broad (38/33). All the tibiae armed below with 2–2–2 spines, the last pair apical; tibia III and IV with a proximal and a submedian spine above. Tibia and patella I, 7.82 mm. long, tibia and patella IV, 8.12 mm. long. For the structure of the epigynum see figure 4.

TYPE LOCALITY.—China: female holotype and two female paratypes from Yunnanfu, Yunnan Province (John Graham), the holotype

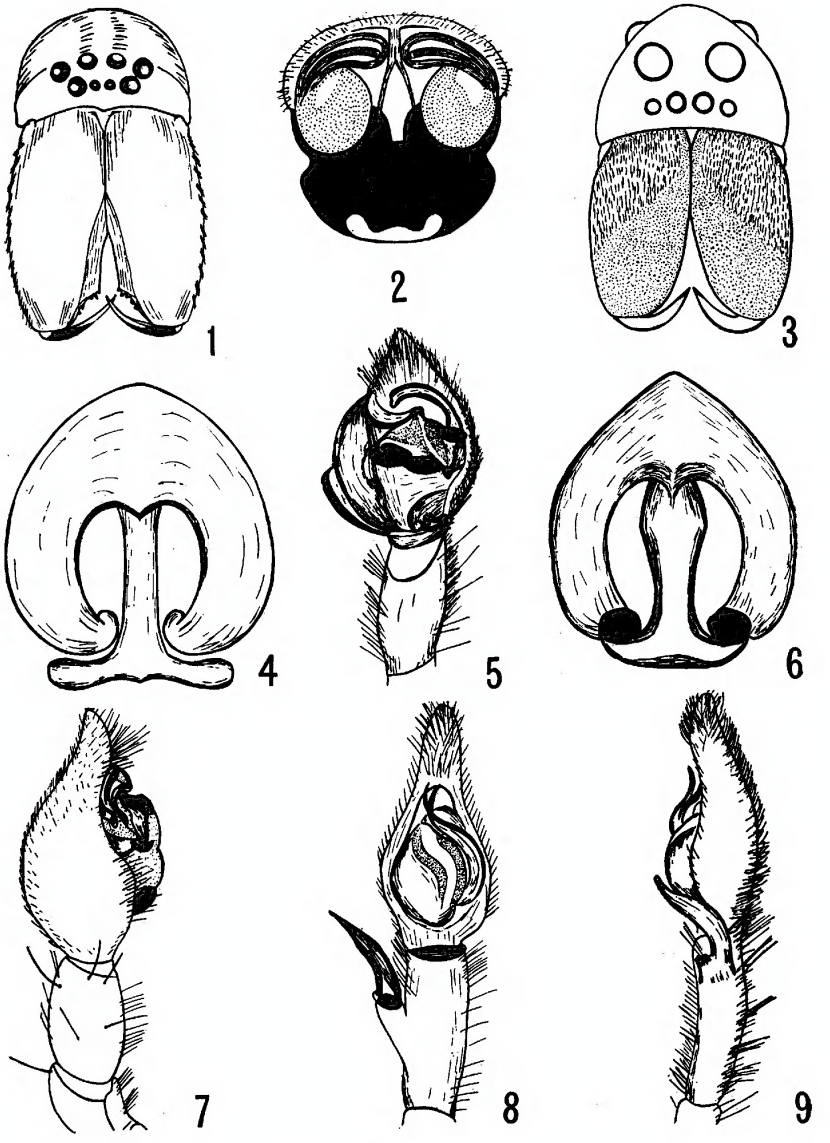

Fig. 1. *Wadotes primus*, new species, face.
Fig. 2. *Wadotes primus*, new species, epigynum.
Fig. 3. *Lycosa melica*, new species, face.
Fig. 4. *Lycosa melica*, new species, epigynum.
Fig. 5. *Pardosa pacata*, new species, palpus, ventral view.
Fig. 6. *Lycosa atropos* L. Koch, epigynum.
Fig. 7. *Pardosa pacata*, new species, palpus, lateral view.
Fig. 8. *Heteropoda hamata*, new species, palpus, ventral view.
Fig. 9. *Heteropoda hamata*, new species, palpus, lateral view.

and one paratype in the collection of The American Museum of Natural History, one paratype in the collection of the United States National Museum (U. S. N. M. Cat. No. 1233).

This species is readily separable from the other oriental members of its genus by the curious coloration of the chelicerae which are provided basally with a sheathlike covering of reddish hairs while distally they are black.

Lycosa atropos L. Koch

Figure 6

Lycosa atropos L. Koch, 1877, Verh. Zool.-Bot. Gesell. Wien, XXVII, p. 770, Pl. xvi, fig. 34.

Male.—Total length, 11.88 mm. Carapace 6.24 mm. long, 4.55 mm. wide. Abdomen (exclusive of spinnerets), 5.54 mm. long, 2.87 mm. wide. Carapace dark brown except for a yellowish median dorsal stripe which narrows between the eyes of the third row and has its anterior termination between this row and the second row; the band tapers regularly caudad to the posterior border. Sides with slight indications of submarginal bands. Eye region darker, the eyes on black discolorations. Clypeus dark brown, the chelicerae reddish with black inner edges. Sternum, labium, endites, and coxae light brown, the sternum with a dark median longitudinal mark. Legs light brown, the anterior patellae and tibiae with a dark stripe on each lateral surface, the posterior tibiae with the stripe broken at the middle. Abdomen grayish, the dorsum provided with a basal lanceolate mark that gives off on each side two light bars, one from the middle and one from the caudal end; below this pattern are two distinct light brown chevrons and indications of a third. At the anterior declivity is a dark brown or black mark, almost as wide as the abdomen at that point, portions of which extend to the antero-lateral borders of the dorsum. Sides of the abdomen light gray, the venter with three longitudinal dark bands.

Width of the face, 3.17 mm. First row of eyes shorter than the second (40/46), slightly procurved, the eyes subequidistant with the laterals three-fourths as large as the medians. Quadrangle of posterior eyes wider than long (24/20), the anterior eyes larger than the posterior (3/2). Clypeus about equal in height to the diameter of an anterior median eye. Lower cheliceral margin armed with three robust teeth. Labium longer than broad (14/12), the basal excavations deep (5/14). Posterior spinnerets distinctly longer than the anterior (15/12), the distal joint of the posterior spinneret about half as long as the proximal. Palpus as in L. Koch's figure cited above.

Legs 4123, all the tibiae armed below with three pairs of spines, the distal pair subapical. Tibiae III and IV armed above with basal and submedian spines. The measurements of the legs in millimeters are as follows:

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	5.50	2.57	4.55	4.46	2.97	20.05
II	4.95	2.57	2.96	4.55	3.07	18.10
III	4.95	1.98	3.56	4.47	3.00	17.95
IV	6.44	2.48	4.95	7.13	3.47	24.47

FEMALE.—Although the following description is based on a single specimen so injured as to be almost indescribable, it is of value since the female of this species has heretofore been unknown. Carapace, 7.43 mm. long, 4.45 mm. wide. Abdomen (exclusive of spinnerets), 6.63 mm. long, 4.45 mm. wide. Carapace light brown, lateral declivities darker, dorsum with a broad median longitudinal stripe, yellowish in color and with irregular borders, which is constricted anteriorly ending between the second and third eye-rows, broadest anterior to the thoracic groove and tapering posteriorly. Eye region and most of the pars cephalica light. On each side of the dorsal stripe at its posterior termination is a distinct dark brown triangular mark with its apex directed cephalad. Clypeus light brown. Chelicerae reddish, black at the inner edges. Sternum, labium, and endites light brown, the sternum with an irregular median dark mark. Legs as in the male. Dorsum of the abdomen as in the male, venter somewhat darker and not forming distinct bands. The female as a whole is lighter than the male and its markings are not so clearly set off from the background.

Width of the face, 3.56 mm. First row of eyes distinctly shorter than the second (33/40), slightly procurved, the eyes about equally spaced, with the laterals about five-sevenths as large as the medians. Quadrangle of posterior eyes wider than long (23/19), the anterior eyes longer than the posterior (16/11). Clypeus about equal in height to the diameter of an anterior median eye. Lower margin of the furrow of the chelicerae armed with three robust teeth equally spaced. Labium longer than broad (13/11). Posterior spinnerets distinctly longer than the anterior, the distal joint of the posterior spinnerets about half as long as the proximal. All the legs except those of the first pair lacking; tibia and patella of this pair, 7.13 mm. long.

Epigynum longer than wide (21/18), posteriorly broad, anteriorly ending in a rounded point. Guide characteristically inverse T-shaped with the transverse bar wide and the longitudinal piece enlarged at the middle. For further details regarding the structure of the epigynum see figure 6.

RECORDS.—China: male and female and two immature females from Hong Kong, late January, 1920 (Bassett Digby), in the collection of The American Museum of Natural History; male from Suifu, Szechwan Province (D. C. Graham), in the collection of the United States National Museum.

In the structure of the palpal organ the male of this species is to all practical purposes indistinguishable from its closely related Chinese allies, *L. coelestis* L. Koch and *L. subcoelestis* I. Fox. The species is unique, however, in the possession of unusually long posterior spinnerets and by these it may readily be separated from the other Chinese members of its genus. Although this character pertains more or less to the subfamily Hippasinae, *L. atropos* finds its proper place in *Lycosa*, for its other structures are characteristic of that genus.

In spite of reasonable activity in the study of Oriental spiders since 1877, when this species was first described, the above finds seem to represent the first record of its occurrence subsequent to that date.

This is explicable on the basis that large collections, in reality containing *L. coelestis* L. Koch, *L. subcoelestis* I. Fox, and *L. atropos* L. Koch could easily have been reported as the first-named species. Since *L. atropos* has been found as far west as Suifu, Szechwan Province, and as far east as Hong Kong, it is believed to occur commonly throughout China and southern Japan.

Pardosa pacata, new species

Figures 5 and 7

MALE.—Total length, 7.69 mm. Carapace, 3.94 mm. long, 2.77 mm. wide. Abdomen, 3.07 mm. long, 1.98 mm. wide. Carapace orange-brown, bearing on each lateral declivity a broad longitudinal dark brown band having irregular borders; eye region dark brown, provided with bars of yellowish hairs laterad between the first and second eye-rows and above the anterior median eyes; dorsum consisting of a light median band beginning a short distance behind the third eye-row, widest at its middle, and narrowing abruptly as it goes down the posterior declivity. Sides with broad submarginal bands concolorous with the dorsum that terminate at the borders of the pars cephalica. Clypeus and chelicerae dark brown. The sternum and labium also dark brown, the former bearing a small irregular light mark at the middle, both contrasting strongly with the coxae and endites which are yellowish. Legs orange, clear below, above the femora bear two or three incomplete annulations, while the tibiae bear a basal and a median annulation. Palpus clear yellow except for the tarsus which is dark brown and contrasts strongly with the other joints. Abdomen yellowish, with a brown median lanceolate mark at the base and five brown transverse bars or chevrons distally. Venter orange or yellow.

First row of eyes slightly procurved, the medians separated from each other by one and one-half diameters, much closer to the laterals which are three-fourths as large. Second eye-row wider than the first (32/25), the eyes separated by one and one-half diameters. Third eye-row wider than the second (39/32), the eyes separated by about three diameters. Quadrangle of posterior eyes broader than long (39/32), narrowed in front. Head portion moderately broad, the width at the posterior eye-row about three-fifths the greatest width of the carapace. Clypeus equal in height to about twice the diameter of an anterior median eye. Lower margin of the furrow of the chelicerae armed with three teeth of which the basal is weak, the others are robust. For the structure of the palpus see figures 5 and 7.

Legs I, 12.97 mm.; II, 12.38 mm.; III, 11.19 mm.; IV, 16.24 mm. The first tibiae armed below with three pairs of spines, of which the basal and submedian pairs are long and robust while the apical is weak.

TYPE LOCALITY.—China: male holotype from Hong Kong, late January, 1920 (Bassett Digby) in the collection of The American Museum of Natural History. Male paratype bearing the same data in the collection of the United States National Museum (U. S. N. M. Cat. No. 1234).

This species resembles *P. multivaga* Simon in the possession of annulate femora and tibiae, but differs in the structure of the palpal organ

and in being larger in size. In its general coloration it is similar to the figure published by Bösenberg and Strand for their *Tarentula depectinata*, but is distinguishable from that species by its complex palpal organ.

Ctenidae

Anahita fauna Karsch

Anahita fauna Karsch, 1879, Verh. Ver. Rheinl., XXXVI, p. 99, Pl. 1, fig. 18.

Record.—China: two immature females from Hong Kong, late January, 1920 (Bassett Digby), one in the collection of The American Museum of Natural History, the other in the United States National Museum.

The generic position of this species will be doubtful until a close examination of mature specimens can be made. Unfortunately, the ones at hand are immature.

Sparassidae

Heteropoda forcipata (Karsch)

Sarotes forcipatus Karsch, 1881, Berliner Entom. Zeitschrift, XXV, p. 38.

Record.—China: male from Yunnanfu, Yunnan Province (John Graham) in the collection of The American Museum of Natural History.

Heteropoda amphora I. Fox

Heteropoda amphora I. Fox, 1936, Jour. Washington Acad. Science, XXVI, No. 3, p. 125, Fig. 1.

Record.—China: female from Hong Kong, late January, 1920 (Bassett Digby) in the collection of The American Museum of Natural History.

The discovery of this species in Hong Kong, so far from its type locality in Szechwan Province, indicates that it may be of general distribution in China.

Heteropoda hamata, new species

Figures 8 and 9

Male.—Total length, 20.79 mm. Carapace, 9.51 mm. long, 8.91 mm. wide. Abdomen, 11.99 mm. long, 6.44 mm. wide. Carapace reddish brown, dorsum with a dark median line extending from between the anterior median eyes to the posterior declivity. Caudad is a broad transverse white band, outlined above and below with black hairs, that is reminiscent of *H. venatoria* (Linnaeus). Sides of the carapace with reddish stripes or bars and narrow marginal black lines. Eye area, clypeus, and chelicerae reddish, the last named structure darkest. Coxae, sternum, and endites clear yellow, the labium darker, edged with light brown. Legs light brown, the first pair somewhat darker than the others. Abdomen dark brown, with a light basal lanceo-

late stripe having on each side two distinct light spots, one at the middle and one at the posterior end. Sides of the carapace concolorous with the dorsum; venter lighter, with two longitudinal dark lines extending from the epigastric furrow almost to the spinnerets.

First and second eye-rows slightly recurved, the former seven-ninths as wide as the latter. Anterior median eyes separated by about a diameter, one-half a diameter from the anterior laterals, and three-fourths as large as the latter. Posterior median eyes separated from each other by more than a diameter, from the posterior laterals by less than two diameters and two-thirds as large as the latter. Median ocular quadrangle longer than wide (20/19), narrower in front than behind (15/19). Clypeus higher than the diameter of an anterior median eye (10/7). Chelicerae with four teeth on the lower margin of the furrow, the one furthest from the claw being the least robust, and three teeth on the upper margin of which the middle one is the most robust. Labium about as long as wide, much shorter than the endites (4/9).

Anterior tibiae with 2–2–2–2 spines below, the last pair apical, posterior tibiae with 2–2–2 spines below, the last pair apical. Trochanters notched. The legs are too injured to be measured with accuracy. Patella of the palpus slightly smaller than the tibia, the latter with a single curved process, broad basally but curving distally. The palpus resembles that of *H. forcipata* Karsch but differs in that the tibia is provided with a single process rather than with two in a forceps-like arrangement. For further details regarding the structure of the palpus see figures 8 and 9.

TYPE LOCALITY.—China: male holotype and a male paratype from Yachow, Szechwan Province, May–June, 1928 (D. C. Graham). The holotype in the collection of the United States National Museum (U. S. N. M. Cat. No. 1235), the paratype in the collection of The American Museum of Natural History.

The records available indicate that eight Chinese spiders have been referred to *Heteropoda*, but of these two are of doubtful validity. Strand has offered good reasons for the belief that *H. aulica* L. Koch is equivalent to *H. venatoria* (Linnaeus), or at most a subspecies of it, and that *H. peditata* (Karsch) is identical to *H. invicta* L. Koch. Until more is known about this genus, which bids fair to become an important one in China, it will not be possible to ascertain the correct status of the questionable species. *H. venatoria* (Linnaeus), *invicta* L. Koch, *forcipata* (Karsch), *amphora* I. Fox, and the new species described above are similar in general appearance forming a distinct group whose members are brown in color and possess a white transverse band at the posterior border of the carapace as well as a more or less distinct yellow one on the clypeus. The small species, *H. virgata* and *H. grahami* I. Fox differ somewhat from the group, the former being pale without distinct markings, as far as can be judged from the holotype, and the latter yellowish and maculate with red. Although at the time of its description *H. grahami* was believed to be an ally of the uncertain *H. aulica* because of its

resemblance in the epigynum to L. Koch's figure of that structure in his species, it is now known to be distinct and not related to that species.

Gnaphosidae

Gnaphosa compirensis Bösenberg and Strand

Gnaphosa compirensis Bösenberg and Strand, 1906, Abh. Senckenb. Naturf. Gesell., XXX, p. 123, Pl. xvi, fig. 481.

Record.—China: four females from Mupin, Szechwan Province, July, 1929 (D. C. Graham), one in The American Museum of Natural History, the others in the United States National Museum; a female from Shin-Kai-Si, Mt. Omei, 4400 ft., and one from Suifu, Szechwan Province, 1000 ft., June, 1930, in the United States National Museum.

Gnaphosa sinensis Simon

Gnaphosa sinensis Simon, 1880, Ann. Soc. Ent. France, (5) X, p. 121, Pl. iii, figs. 22, 23, and 24.

Record.—China: male from Mt. Omei, Szechwan Province, July, 1921, and a male from Yachow, 2200 ft., August 4, 1930 (D. C. Graham), in the United States National Museum.